"Organizing and Financing Energy Efficiency Projects in Public Buildings"

Proceedings of a Seminar held in

St. John's, Newfoundland

March 29, 1988

Produced by

Department of Mines and Energy

Government of Newfoundland and Labrador

Hon. Rex Gibbons, Ph. D., Minister

90-03771/

This publication is an edited version of the transcripts of a seminar on "Organizing and Financing Energy Efficiency Projects in Public Buildings", sponsored by the Newfoundland Department of Energy*. The seminar was held at the Littledale Conference Centre, Waterford Bridge Road, St. John's, on March 29, 1988.

The opinions expressed are those of the speakers, and not necessarily endorsed by the department.

*Note: The Department of Energy and the Department of Mines were brought together as the Department of Mines and Energy in May of 1989.

Table of Contents

Introduction P. 7

Questions and Answers 9

Speaker Biographies 12

Federal Perspective on Energy Performance Contracting 15

Rose Ritcey

Energy Performance Contracting in Newfoundland Public Buildings 29

Tom Brett

Tables 39

Energy Performance Contracting- The Ontario Government Experience 45

Shiv Sud

Overview of FedSave, the Federal Energy Management Program 53

Denis Lagace

Overview of the Newfoundland Energy Management Program 59

Phil Graham and Don Driscoll

Introduction

A seminar held in St. John's on March 29, 1988 introduced the Energy Performance Contracting (EPC) concept to a diverse group with various responsibilities for the operation of provincial facilities. Speakers explained the applications of this process to energy efficiency retrofits for public buildings. They outlined procedures, discussed benefits, and gave advice concerning EPC projects.

This document presents questions and answers highlighting the main points of discussion, followed by the written notes of the seminar speakers.

Questions and Answers

Q. What is Energy Performance Contracting?

A. Energy performance contracting is a business arrangement in which a private sector company, called an Energy Service Company (ESCo), provides an energy user with a comprehensive package of services (design, engineering, training, monitoring, financial, etc.) associated with the implementation of an energy management program. The user makes no capital payment for the project, and the ESCo is reimbursed for its services from savings generated by the venture.

Q. What are the main benefits of Energy Performance Contracting projects?

A. Energy performance contracting is attractive to energy users because they invest no initial capital to realize a reduction in operating costs. The repayment obligation is contingent on savings being made, so no debt is incurred. In addition, most of the technical risk and problems of realization are shifted to the ESCo.

Q. Who can take advantage of Energy Performance Contracting?

A. Hospitals, schools, universities, municipalities, and government buildings are prime candidates, in large part because they are viewed as excellent credit risks by ESCos. ESCos look for clients with an energy bill in excess of $100,000 per year, and with significant potential for energy savings. More than one building could be involved, as would be the case for school boards and

municipalities. Similar types of facilities, such as skating arenas, could be packaged as a single project.

Q. How big are Energy Performance Contracting projects?

A. Projects typically have simple paybacks of 3 to 4 years, giving a retrofit dollar value of approximately three or four times that of annual energy savings. Most projects cost roughly as much as the energy used by the facilities involved in one year.

Q. What should a client look for when selecting an Energy Service Company?

A. There are three main criteria that prospective clients should consider when choosing an ESCo; financial stability, since a long-term contract is involved; competence and level of expertise of the personnel; and the technical merit and comprehensiveness of the proposal.

Q. What are the main types of Energy Performance Contracting agreements?

A. There are three types of energy performance contracts of interest to public institutions:

- *First out contracts*, where the ESCo receives all the energy savings for a period of up to 5 or 6 years, or until the project is paid off. The institution gets all the savings after this time. There is no increase in energy costs to the buyer.

- *Shared savings contracts*, which allow the client to receive a percentage of the savings for the duration of the project. Contracts of this type are longer than the "First out" option so the ESCo can make the same rate of return. Both agreements require complete disclosure of project costs and savings.
- *Chauffage contracts*, where the ESCo not only builds, but also operates, an energy facility. One example of this is an ESCo-owned heating plant selling steam to a hospital.

Q. What is the role of the building operation and maintenance staff in relation to the ESCo?

A. Existing staff continue normal functions. They also receive training and ongoing technical support from the ESCo on the operation and maintenance of new systems. They are responsible for monitoring energy savings, with periodic checks by the ESCo. The operating capability of the existing staff should be considered during the planning of a project. For example, high-tech computer controls should not be installed if there is, or will be, no one on staff who can be trained to operate them.

Q. Should owners attempt this type of project themselves, and thereby keep all the savings?

A. If capital, managerial and technical resources are available, building owners would not normally implement energy projects through an EPC deal. But, such resources are often not available, and delay is always costly. Building owners should do *no-cost* and *low-cost* energy improvements themselves, leaving the capital improvements for the ESCo. Note that owners may wish to include some no-cost and low-cost measures as part of their package, in exchange for the ESCo agreeing to include some desirable longer payback measures or non-energy related measures.

Q. What incentive is there for the operators of public buildings to implement Energy Performance Contracting projects?

A. The prospect of increased energy efficiency and reduced operating costs over the long term will only give institutions the incentive to implement projects if they are allowed to keep a portion of those savings for some time, to redistribute in other areas. Most institutions *do* have such incentive.

Energy Performance Contracting Policy in Newfoundland and Labrador

Following the seminar, the provincial government developed a formal policy on energy performance contracting. In summary, EPC is recognized as an acceptable way to implement viable energy efficiency retrofits, alternative energy projects, and other cost-saving energy-related projects.

The guidelines for project implementation are:

- The facility manager shall prepare a Request for Proposal (RFP) in accordance with the standard RFP composed by the Department of Mines and Energy.
- The manager shall issue a call for a public proposal, with evaluation of proposals and selection of energy service companies as per the RFP.
- Establish a contract between the facility owner(s) and the ESCo in accordance with the standard energy performance contract.
- Obtain assistance and advice from qualified professional engineers, lawyers and accountants to develop the RFP and negotiate the terms of the contract.

Speaker Biographies

J. Thomas Brett:

Tom Brett is an energy specialist with the Ottawa law firm of Johnston and Buchan. His clients include the federal government, provincial governments, and many private sector firms in various aspects of the energy business. He has recently assisted the federal government in developing standardized contracts for procuring energy savings services. Prior to joining Johnston and Buchan, Tom was Vice-President and General Manager of Canertech Conservation Inc., a leading Canadian energy performance contracting firm.

Don Driscoll:

Don Driscoll is Manager of Energy Audit and Management with the Newfoundland Department of Mines and Energy. Don is a civil engineer with a B. Sc. from Nova Scotia Tech. He has been involved in the energy management field since 1979, first as senior engineer with the Energy Bus Program (1979/1980), then as the province's program coordinator with the National Energy Audit Program (1980 to 1985), and, subsequently, as Head of the Provincial Energy Management Program, aimed at reducing costs in public facilities.

Phil Graham:

Phil Graham is the Director of Energy Programs with the Newfoundland Department of Mines and Energy. He is a civil engineer holding a B. Sc. from the University of Toronto. Phil began working with the Department in 1979 as a project engineer in the conservation and renewable energy fields. He has been responsible for a number of federal-provincial agreements, and is now in charge of provincial programs promoting efficient energy use and the development of the Province's alternative energy potential.

Denis Lagace:

Denis Lagace is the head of the FedSave Energy Management Program offered by the federal department of Energy, Mines and Resources. In that role, he is responsible for developing energy management plans appropriate to each federal department and agency. Denis is a mechanical engineer and holds a Master of Business Administration degree from the University of Ottawa. Before joining FedSave, Denis worked with Ports Canada, the National Energy Board, the Public Service Commission, and Bell Canada.

Rose Ritcey:

Rose Ritcey holds an MBA from Dalhousie University in Nova Scotia. For the past few years, Rose has worked with Energy, Mines and Resources Canada's Coordination and Strategic Planning Division, and, before that, with the Auditor General's office. At EMR, she worked on innovative financial policy development and program evaluation. She recently assumed new responsibilities with the Federal Energy Management Division involving development of energy performance contracting in Federal Government operations.

Shiv Sud:

Shiv Sud is a Policy Advisor with the Ontario Ministry of Energy. Prior to joining the Ministry, Shiv held positions with two multi-national companies in accounting, corporate finance and strategic planning. He is a mechanical engineer, with an MBA degree, as well. He has done extensive work on economic and financing issues related to energy efficiency improvement and alternative energy projects, and has spoken at a number of conferences and seminars on this subject.

Federal Perspective on Energy Performance Contracting

Rose Ritcey

Coordination and Strategic Planning Division

Energy, Mines and Resources Canada

Federal Perspective on Energy Performance Contracting

The Nature of Energy Performance Contracting

Energy Performance Contracting, also known as Savings Finance, Innovative Financing, Third-Party Financing, and Shared Savings, represents a relatively new approach to the implementation of energy management projects that differs from traditional approaches in two important ways:

- A single supplier, the Energy Service Company (ESCo), provides the energy user with a complete package of technical, design, monitoring, training, maintenance, managerial, and financing services.
- Payments to the ESCo for this package of services are always contingent in some way on actual energy savings. In other words, Energy Performance Contracting (EPC) is a business arrangement whereby the financial and technical risks of an energy management project are transferred from the energy user to the ESCo.

The service company undertakes a comprehensive analysis of all major energy systems, assuming responsibility for design, specifications, and installation of new complexes. They also provide ongoing management, maintenance and monitoring, and train personnel. The ESCo provides all up-front capital, and is reimbursed out of energy savings that occur.

Although individual ESCos market their services in different ways, there are usually four major steps involved in establishing an energy performance contract.

1. Walk-Through/ Preliminary Energy Audit

The energy service company conducts a preliminary, or walk-through, energy audit of the facilities to identify opportunities for improved energy efficiency. This audit requires at least two to five person-days of effort, and involves a physical inspection of the facilities, collection and analysis of utility bills, site drawings and other information, interviews with building operators and managers, etc. Based on this information and its experience in similar facilities, the ESCo will develop an approximate estimate of the potential for energy savings.

2. Detailed Energy Audit

If the energy savings potential is sufficiently attractive to both the ESCo and the energy user, the ESCo then carries out a detailed energy audit. The purpose of the study is to verify the energy

savings estimate and to develop proposals for specific, cost-effective energy management measures. The ESCo makes a thorough physical inspection of the design and condition of all energy systems, measures air-flow rates, combustion efficiencies and other factors, analyzes energy use patterns (often with the help of computerized simulation models), and so on.

Depending on the complexity of the facilities and the systems being analyzed, the detailed audit requires one to three months to complete, and costs $10,000 to $30,000. If an EPC agreement based on the results of the study is turned down by the energy user, the user normally has to pay for the detailed audit.

3. Energy Performance Contract

The detailed audit forms the basis for the negotiation of a contract. The contract covers all the details of the agreement, including the duties of the two parties (Who is responsible for maintaining which pieces of equipment, for example.), what retrofit activities are to be undertaken, when title to the energy management equipment is to pass from the energy service company to the energy user, the formulae by which energy savings are to be calculated and shared, the duration of the agreement, any guarantees of energy savings, and any other agreed-upon details. Contract negotiation usually takes from one to three months.

4. Implementation

The final step in setting up an EPC agreement involves the preparation and execution of a detailed implementation plan for the project. This includes acquiring and installing equipment, establishing preventive maintenance schedules, setting up energy monitoring procedures, and training equipment operators. Depending on the complexity of the project, realization can take up to one year.

A common variation of the above approach involves preparing and signing the contract after the walk-through energy audit. In this case, the detailed energy audit becomes the first activity of the EPC project.

The formulae for the calculation and sharing of energy savings are central elements of the EPC process. Succinctly, energy savings are calculated by comparing current energy costs to an estimate of what costs would have been if the agreement had not been implemented. This estimate is referred to as the *baseline*. This can be expressed in either dollar or energy unit terms, more often the latter.

The baseline is developed by analyzing energy use at the facility over several preceding years. Actual energy use is adjusted to account for the impact of weather conditions, occupancy levels and other factors. The result can be as simple as a schedule listing baseline energy use by month, a multiple regression formula which estimates the baseline by month, or a multiple regression formula

which estimates the baseline use as a function of weather, building activity levels, and changes in building purpose.

Under an EPC agreement, energy savings are calculated on a monthly basis. The first step in the process is to adjust the baseline for significant variations in actual conditions compared to the average used to derive the baseline. The energy savings are then calculated by subtracting current energy use from the estimate, and multiplying by the current cost of the energy unit. In some agreements, energy prices are fixed at the level existing when the agreement is signed. This protects the energy service company and the client from the effects of large variations in energy prices.

In Canada, EPC agreements share energy savings in one of three ways:

- *First-Out*: The energy service company receives 100 percent of the energy savings until the total cost of the operation (including the profit of the ESCo) is paid off, or until the end of the agreement is reached, whichever comes first. "First-out" agreements tend to be shorter than "Shared savings" agreements, and contracts of five years duration are common.
- *Shared Savings*: Energy savings are shared between the service company and the energy user in either fixed or varying proportions over the life of the agreement. Such agreements tend to run for seven to ten years.
- *Chauffage*: The energy user pays the ESCo an amount equal to its energy bills before the project (baseline) minus an agreed-upon discount. The ESCo pays the utility bills for the project from this payment. For example, if energy bills had been $100 per month and the discount rate was 5 percent, the monthly payment to the ESCo would be $95. "Chauffage" agreements tend to run for seven to ten years.

Benefits

The undertaking of energy management measures through an EPC agreement can lead to significant benefits.

- Since the energy service company provides all financing for the project, the energy user avoids capital expenditures, leaving funds available for other projects.
- Technical risks are minimized, as the ESCo assumes the responsibility of achieving planned performance levels.
- The ESCo transfers its expert understanding of energy systems and issues to facility operators and managers.
- The user has the convenience and efficiency of "one-stop" shopping for all energy management services, including audit, design, installation, training, monitoring, and financing.
- An organization with a relatively small budget for energy-related projects can expect to implement only one or two retrofit measures annually. A comprehensive program of

capital-intensive retrofit measures can be implemented at one time, through an energy performance contract.

Potential Disadvantages

Energy service companies do not provide their services free. From the narrow financial perspective, EPC is usually more costly than other sources of financing. It must be remembered, though, that the ESCo is providing a package of services, not simply an alternative source of investment.

- The cash-flow needs of ESCos mean that the average payback period for an EPC project is between 2.5 and 4.5 years. Unless the project includes some retrofit measures with very short paybacks (e.g. one year or less), it will be difficult to include retrofit measures with simple paybacks of seven to eight years (or longer).
- As "outsiders", ESCo personnel could disrupt labour relations, particularly where union agreements are in place.
- Even when standards of comfort and environmental quality are clearly specified in the deal, the ESCo's primary objective of controlling energy consumption might conflict with the user's broader responsibilities.
- Operating staff must be adequately trained to ensure the continuation of energy savings after the end of the original agreement.

Many of these potential difficulties can be anticipated prior to setting up an agreement, and can be dealt with either through the wording of the contract, or through the establishment of an effective day-to-day working relationship with the ESCo.

The Canadian Energy Performance Contracting Industry

The Canadian energy performance contracting industry is approximately seven years old. Over 100 million dollars worth of EPC services have been sold to date. The most active buyers have been hospitals, universities and municipal governments. Since the first energy service company was founded in Quebec, not surprisingly, that province, along with Ontario, has been the site of most projects. There has been some activity in the Atlantic provinces, including ventures by several school boards in New Brunswick, the University of Prince Edward Island, a hospital in Newfoundland, and an apartment building in Halifax. There have been very few projects in the Prairies and B.C.

There are fewer than twenty ESCos in Canada that claim to offer EPC services, and only half of these are fully active in the business. There are certain recognized national and regional industry leaders.

Econoler Inc. is the largest and oldest energy service company in Canada, and is responsible for most of the energy performance

contracts signed to date. The company has offices, or is affiliated with engineering consulting companies, in all parts of the country. Econoler also has subsidiaries in the U.S. and Europe.

The Rose Technology Group Ltd. is probably the second largest ESCo in Canada, and the largest in Ontario. The Rose Group has been involved in some of the most extensive operations in Canada, including a recent project at Queen's University.

Enersave Technologies is one of the few publicly owned ESCos and is listed on the Vancouver Stock Exchange. The company is an aggressive marketer, and has done many projects where energy bills have been relatively small (less than $50,000).

Johnson Controls Ltd. undertook some of the earliest EPC projects in Canada, and is still a major player in the market.

Honeywell is one of two companies working on an EPC project for the Ontario government. They are affiliated with Wardrop Engineering in the West.

Engineering Interface is an important ESCo, and has undertaken many enterprises in Ontario.

Trans-Alta Energy Systems is a wholly-owned subsidiary of Trans-Alta Resources, the largest privately owned electric utility in Canada.

BFR, ADMIC Controls, and *Sutherland-Schultz* have completed various projects in Ontario. *Econergy Ltd.* has been active in Calgary, while *AERCO Industries* is located in British Columbia. *Enerscan* has its offices in Nova Scotia.

Note: The above is intended only as a descriptive overview of the Canadian EPC industry, and does not represent an endorsement of these particular companies by EMR.

The growth of our national industry has been orderly, without the bankruptcies and scandals that have plagued its American counterpart. The future of the Canadian industry is also promising. Besides continuing to expand in the West, EPC is likely to penetrate the commercial real estate, light industrial and government sectors, as well.

The Energy Performance Contracting Support Strategy of EMR

Energy performance contracting can contribute to the achievement of several important policy objectives.

- *A more energy efficient economy.* EPC addresses many of the critical barriers to the use of cost-effective energy management technologies. Therefore, greater market penetration of EPC would help to realize a portion of the

significant potential for energy conservation existing in Canada.

- *Energy performance contracting can help support the goals of industrial growth and regional development.* The Canadian EPC industry is already a $10-$20 million business, and is an important player in the $6 billion energy management industry. Many of the jobs generated by these activities are at the local level.
- *Energy performance contracting can encourage exports of goods and services.*

EPC offers several potential benefits to Canada, but further market penetration faces much opposition. It is EMR's role to undertake activities to alleviate these problems, and ensure that the market functions more effectively.

EMR's support strategy consists of three major activities: opening up federal facilities to EPC; providing energy users in the commercial, industrial, and institutional sectors with information on this subject; undertaking on-going analyses of the Canadian market and exchanging information with other jurisdictions on EPC projects.

In terms of the second activity, we are preparing a series of communication tools to increase awareness and knowledge of EPC among energy users in the institutional, commercial and industrial sectors. These tools include a brochure and introductory presentation for senior level managers, as well as a detailed how-to manual, financial spreadsheet, case studies, and workshop for middle managers and operations personnel. This material will be available in a few months.

At this time, EMR's support activities focus on our own backyard; that is, on the use of EPC services in federal facilities. There are a number of reasons for this interest.

Energy performance contracting represents a "good deal" for the federal government. As in most large organizations, the federal energy environment is characterized by lack of capital funds for energy efficiency improvements, lack of trained personnel to undertake and manage complex retrofit projects, and lack of consistent senior management interest in energy efficiency.

In 1986-87 the federal government spent $546 million on energy. Although energy consumption has decreased nearly 30 percent in the last 10 years, the potential for further reduction is estimated at $80-100 million annually. To achieve this level of savings requires approximately $162 million in capital investment. EPC is seen as a means of realizing a significant portion of this potential without the federal government having to spend any of its very limited capital funds.

The second reason we are interested in opening up the federal market to EPC is to support the overall development of this industry. Even though such procedures will not be suitable for all

sites, the potential size of the federal EPC market is several times that of the existing Canadian market.

Finally, the use of EPC in federal facilities would show leadership and commitment to energy efficiency to the private sector.

EMR's Experience with the Acquisition of Energy Performance Contracting

Our approach to the acquisition of EPC services has been to focus on the development of standardized acquisition systems and procedures. We wanted to have an administratively manageable process that would meet the needs of both government and industry before trying to set up an EPC project in a specific facility.

This has not been an easy task. We have been trying to develop a practicable set of procurement procedures for over two years. The complex nature of EPC meant that a very large number of "players" within the federal acquisitions system had to be included in the discussions. As well, this type of program is a relatively recent phenomenon, and no similar service is currently being purchased by the federal government. Officials often had no meaningful basis for comparison.

Energy Performance Contracting and the Financial Administration Act

The first phase of our work dealt with whether it was legal for the federal government to use this type of contracting. Financial transactions in the federal government are ruled by the Financial Administration Act (FAA). Section 36 of the FAA states that the government cannot borrow money without the express permission of Parliament.

There was some concern that EPC represented a forbidden borrowing arrangement in the form of a capital lease; i.e. the Energy Service Company "lends" the government the funds to purchase energy management equipment and is repaid over a period of years out of the energy savings which arise. Fortunately, we were able to obtain a legal opinion last spring from the Department of Justice which stated that EPC did not run afoul of Section 36 of the FAA.

Request for Proposals, and the Selection Process

The second phase of our work has involved the development of a standardized Request for Proposal (RFP) for energy performance contracting. The highlights of the RFP are as follows:

- *The procurement process is competitive.* A competitive process ensures that the government receives top quality proposals at the best financial terms. We reject the argument made by some energy service companies that EPC proposals are too expensive to prepare, and that they cannot be fairly evaluated. The costs of preparing a proposal under

our approach will be comparable to those for projects of a similar size, and we believe that our evaluation method is fair.

- *"Shared savings" and "First-out" are the only acceptable EPC approaches for federal government contracts.* From an administrative point of view, it would be very difficult to have an outside company pay utility bills on behalf of the government, hence, "Chauffage" will not be used in federal government projects.

  Each RFP will specify whether the EPC project will use a "Shared savings" or "First-out" approach. EMR will offer advice about the advantages and disadvantages of each, but individual departments will decide which contract to use.

- *The RFP will include an energy survey report on a facility, prepared by an independent engineering consulting company on behalf of the government.* The energy survey report will contain data on energy use at the facility over the past 2 or 3 years, descriptions of energy using systems, and a rough estimate of potential energy savings.

  The survey report is not intended to be a substitute for the ESCo's walk-through audit. Rather, it is intended to remove some of the burden of gathering basic background data from the ESCos. Equally important, the energy survey will provide the government with the information necessary to become a more knowledgeable purchaser of EPC services.

  Energy service companies will be expected to do a preliminary audit on the facilities, and attend a bidders conference before submitting a proposal. ESCos will be given access to the facilities for a period of about 2 weeks, and will be free to visit the site as many times as they wish. The successful bidder will perform a detailed audit to verify its preliminary findings.

- *Proposals will have to meet several mandatory criteria to be considered acceptable.* For instance, the ESCo must be financially stable (to be judged by audited financial statements or performance bonds), and the estimated savings must be greater than any associated increases in operating costs. Acceptable proposals will then be rated according to three broad criteria;

  1. The past experience of the ESCo on similar projects.....20 points

  2. The experience and knowledge of the project team..... 10 points

  3. The technical quality of the proposal..... 70 points

  Total..... 100 points

[The third category contains several important elements;

The estimated volume of energy savings, the nature of the proposed retrofits, and their payback periods, and the overall creativity of the proposal .....30 points

The approaches to interaction with personnel at the facilities, including training..... 15 points

The project implementation plan..... 10 points

Maintenance, energy consumption, monitoring, and project management..... 5 points each]

Depending on the facility, an energy performance contract's requirements may lead to reductions in staff. ESCos will be expected to include such opportunities in their proposals. However, we will not explicitly evaluate this element.

- *Only energy service companies that receive 70 or more points will be considered for award of the contract.* Within this group, the contract will be awarded to the company that receives the highest rating. This reflects our belief that, in the long-run, the highest quality proposal will provide the greatest net benefits to the government.

  Where two or more proposals are within 10 points of each other, we consider them tied; that is, their scores are too close to determine which represents the best value to the government on the basis of points alone. Accordingly, we will look at the financial attractiveness of the proposal to the government. We do this by using the net present value (NPV) of the projected cash flow to the government over a 10 year period. If two or more proposals are tied, then the proposal with the highest NPV will be awarded the contract.

  We were, however, concerned about sacrificing proposal quality to obtain a higher NPV. Therefore, the final component in our decision-making process allows us to award the contract to the proposal with the highest NPV only if this NPV is at least 10 percent greater than the NPV of the proposal with the highest points.

- *To ensure that energy service companies do not inflate their energy savings estimates to win the contract, we require that the final estimate prepared after the detailed energy audit be at least 90 percent of that included in the proposal.* If this condition is not met, the government can terminate the contract after the detailed audit is complete, with no penalty.

  ESCos are not required to guarantee their annual savings estimates. We were concerned that companies would respond to this requirement by simply offering the government a lower share of the project savings to compensate for the additional risk.

We do insist that in the last year of the contract actual energy savings be equivalent to forecast savings. Any shortfall is simply deducted from monthly payments to the ESCo. We believe that this final year "check-off" provides us with a safeguard against accepting an energy system which is not functioning as promised.

We have just completed discussions on the recommended RFP with nine energy service companies. On the whole, their comments were favourable, although they expressed concern about certain details.

In the very near future, representatives of the major energy-using departments will be asked to provide their comments on the RFP. A revised version became available as of June, 1988. Over the course of the summer any remaining legal and administrative difficulties surrounding the RFP will be resolved.

In the meantime, we have begun to look for facilities that would be appropriate for the first federal projects. We are looking for a "fat" building, with a large energy conservation potential and an annual energy bill of approximately $200,000. Ideally, the site would not be far from Ottawa, so that we could closely monitor the project. Our goal is to issue RFPs for the first federal project(s) by mid to late fall. In this case, the first federal energy performance contracts would be signed by early 1989.

The rate at which EPC services penetrate the federal government market depends on the other departments. As previously noted, EMR cannot force departments to employ this process, but does plan to undertake a comprehensive promotion campaign to encourage its use.

Lessons from EMR's Experience

Several important lessons can be drawn from EMR's experience in trying to open the federal government market to energy performance contracting.

- *It is vital to have consistent senior management support through-out the system.* Although such support does not guarantee success, the lack of it almost certainly guarantees failure.
- *The players within the system, and their roles in setting up EPC agreements, must be clearly identified, and their functions specified.* Because EPC represents a package of diverse services (engineering, energy management, monitoring, training, maintenance, financing) it usually does not fall completely within the mandate of any one group.
- *Most of the policy and administrative problems encountered by public bodies in acquiring energy performance contracts have already been encountered in other jurisdictions.* EMR, either at the regional or headquarters level, can pro-

vide information on what has happened elsewhere. The provincial government should also be contacted.

- *Ideally, a full-time task force of key players should be formed to set up an EPC acquisition system.* If this is not possible, then senior management should assign specific employees to be responsible for this area. As well, it is important there be sufficient funds to undertake energy surveys of potential sites, to promote the use of EPC within the system, and to review ESCo proposals from a technical and engineering perspective.
- *Finally, and most importantly, it is necessary to persevere.* In most instances, it will initially be difficult for public institutions to acquire energy performance contracts, but the benefits are well worth the effort.

Energy Performance Contracting in Newfoundland Public Buildings

Tom Brett

Lawyer/Energy Specialist

Johnston and Buchan, Ottawa

Energy Performance Contracting in Newfoundland Public Buildings

This report will address the desirability of implementing energy performance contracting projects to increase energy efficiency in public buildings in Newfoundland. After a brief explanation and historical background of energy performance contracting in Canada, the report proceeds to estimate the potential for energy savings through this process for various types of public facilities in Newfoundland. It deals with a number of policy issues that need to be clarified or resolved before such operations can proceed, including the issue of competitive bidding, and compliance with the Public Tender Act.

A Request for Proposals is developed to accommodate a competitive bidding environment, and a Draft Energy Performance Contract is available to interested parties. Both of these, once tailored to specific provincial requirements, will provide precedents to public institutions. Finally, after concluding that EPC is a useful tool for energy users, the report makes some specific recommendations as to how the government of Newfound-land could encourage the growth of energy performance contracting in the province.

There is additional material originally included in the section which is considered beyond the scope of this publication. This includes details of government financing and energy performance contracting. This material is available on request from;

Department of Mines and Energy

PO Box 8700

St. John's, Newfoundland

A1B 4J6.

Background

Energy performance contracting denotes a business and contracting approach in which an Energy Service Company (ESCo) designs, builds, and finances a package of energy efficiency measures in a building. It recovers its cost and profits from the savings generated under an energy services contract, which is typically for a term of 5-8 years.

The contract may be a *"First-out"* type, where the client receives no savings until the ESCo is paid out, usually of 4 or 5 years duration, or a *"Shared-savings"* type, where the dollar value of the energy savings produced are shared on say, a 70/30 percent basis

(70 percent for the ESCo) for the term of the contract, which is normally 7 to 10 years. In some cases, the savings split can change over the term of the contract, or the ESCo share may be reduced once costs plus an agreed return is reached.

Some companies offer a *"Chauffage"* contract. Under a chauffage arrangement, the ESCO pays the energy bills on behalf of the owner and guarantees a reduction of 5 to 10 percent from the projected estimate of future energy bills, given the base level of energy consumption. Chauffage agreements are often for a term of 10 to 12 years.

EPC measures are attractive to energy users because they do not invest capital up front to realize the reduction in operating costs. Since the repayment obligation is contingent on there being savings, there is no debt incurred. In addition, a substantial part of the technical risk, and the risk of implementation, is also shifted to the ESCo. Moreover, contracting with an ESCo to do the work on a performance basis extends the range of in-house staff. The user is able to do more retrofit earlier, and can therefore obtain the benefit from the savings over a longer period of time.

EPC financing of energy efficiency improvements in Canada began in Quebec in 1980, and several hundred public and private sector projects (mainly hospitals, school boards, and municipalities in the public sector) have been completed in that province over the last 8 years. In the last five years EPC has spread to Ontario, New Brunswick, P.E.I. and Nova Scotia. Again, hospitals, school boards, municipalities, and universities and colleges have been the prime candidates, in large part because they are viewed as excellent credit risks by the ESCos.

In the large majority of cases, the savings projected by the ESCos have been achieved, and, in many cases, exceeded. Examples of very successful projects include the Workmens' Compensation Hospital in St. John, the University of Prince Edward Island in Charlottetown, and the Halifax Law Courts.

Potential in Newfoundland

The following table, based on information supplied by the Department of Energy, estimates the potential for energy retrofit projects using EPC in our province, by category of public facility. For a detailed breakdown of these figures, see the tables appended to this section.

Type of Facility	Potential Number of Eligible Facilities	Total Energy Bill $Millions	Potential Savings $Millions	Retrofit Project Value $Millions
Hospitals	34	12.2	4.0	12.0
Schools	26 (boards)	9.0	2.3	6.9
Municipalities	7 (munic.)	1.7	0.6	1.8
Prov. Govt.	47 (bldgs.)	6.2	2.1	6.3
Crown Agencies	9	9.1	2.3	6.9
Total	122	38.2	11.3	33.9

Energy consumption data were obtained from the Newfoundland Department of Energy. Average potential savings were estimated (through personal experience and conversations with ESCos and users) at 33 percent for hospitals, municipalities and provincial government facilities, and 25 percent for school boards. Retrofit project dollar value is estimated at approximately 300 percent of the energy savings, corresponding to a three year simple payback.

This method of estimation may underestimate the total project volume, since some projects with paybacks in excess of three years may be financeable. Clearly, energy performance contracting is capable of generating a significant amount of economic activity in the province, in addition to lowering the operating costs of many public institutions.

Policy Issues

Financial Administration Act

Since the payments made to an ESCo under an energy services contract are contingent on energy savings being generated, the obligation is not a debt and, therefore, in my view, not subject to section 36 of the Financial Administration Act, 1973 of the Government of Newfoundland and Labrador. (Note: The Department of Justice agrees with this interpretation.)

Incentives

Individual public institutions must have a direct incentive to enter into EPC transactions to increase their energy efficiency and reduce operating costs. They must, at least for a time, have the ability to retain the dollar savings in energy costs once the ESCo has been paid out, and be able to redeploy those funds into other priorities. The current status for each category of public facility in this respect is as follows:

- School Boards operate under a global budget, supported by a "per-pupil" grant from the Province. Savings achieved in

one area; energy costs, for example, can be redeployed by the individual board to other areas. The same is apparently true for municipalities.

- An administrative ruling from the Department of Health in February, 1988, allowed hospitals to include amortization of the cost of capital expenditures for approved projects as a charge against operating expenses. By extension, the policy would presumably characterize hospital payments to the ESCo as operating expenses, and, therefore, subject to provincial support.

  The ruling does not state whether the operating cost base will be reduced to reflect all or part of the reduced energy costs, or maintained at the current level once the ESCo has been paid out. The policy should be clarified to leave all the additional savings, or at least a substantial part thereof, with the hospital for a specified period.

- A lack of incentive exists in regard to buildings owned and operated by the provincial government itself, through the Department of Public Works. While the incentive perhaps is more difficult to establish for the Department than for local institutions, the operational group in the Department should be permitted to retain a part of the savings for redeployment to other building maintenance and operations priorities.

Public Tender Act

It is not clear whether energy service contracts fall within the scope of the Public Tender Act, 1984. Under the Act, public tenders are required where public works are to be constructed, or goods and services are to be acquired by a government-funded body, including municipalities, school boards and hospitals.

A contract with an ESCo is not a public work as defined in section 2(g) of the Act since there is no outlay of public funds in the first instance. Energy services are being acquired, and the energy performance contract would appear to fall within section 3(l) of the Act, unless the services provided under the contract can be characterized as professional, pursuant to section 2(h) of the Act. That section states:

> (h) *"services" do not include legal, engineering, architectural, accounting, land surveying, banking or insurance services or other services that provide the opinion of a professional;*

In my view, the energy services provided under the ESCO contract, which include engineering work, energy management advice, project management work, training of staff, maintenance and operation of systems, and the like, are professional in the same sense as banking or insurance, for example, and therefore would not necessarily be subject to the legislation. (Note: The Department of Justice agrees with this interpretation.)

From the point of view of policy, the Act surely contemplates a situation where the provincial institutions are paying funds in return for goods, services or construction projects. With energy service contracts, there is no obligation to pay the ESCo, unless, and to the extent that the work produces savings. Furthermore, the province may not wish to put its public institutions in a position where there must be at least two bidders for every energy retrofit project to be implemented by way of EPC services.

The EPC industry is still in its infancy in Canada. There are only 4 or 5 companies that are capable of operating on a national basis, and, to date, only two of these companies have expressed interest in bidding on projects in Newfoundland. Moreover, experience in the Maritimes and elsewhere in Canada would suggest that institutions can negotiate satisfactory transactions where only one ESCo has made a proposal, and there is no competitive bidding process.

The competitive bidding process does offer several advantages. Among them is the increased likehood of the "least cost" solution being implemented, and ensuring that the decision is made in a fair and objective manner. If the process is subject to the Public Tender Act, it becomes legally possible to utilize the Provincial Preference Regulations in decision making. It is likely that ESCos wishing to do business in Newfoundland will want to make some local association, at least on the engineering side. One prominent ESCo has already made local joint venture arrangements in several provinces.

I have made available to the Department of Mines and Energy (Newfoundland and Labrador) a draft Request for Proposals ("RFP") which can be used as the basis for evaluating competitive proposals, should the Province wish to take that approach with any particular project. The RFP sets out the information to be included in the proposals, a rating scheme, and a method of decision-making which takes into account both the technical merits of the proposals and the "cost to the client", which is in reality the comparative present values of the client's share of the savings over some predetermined period.

The information would need to be supplemented by any conditions particular to Newfoundland; compliance with Provincial Prefer-ence Regulations, for example. In this respect the position of the ESCo is analogous to that of a general contractor, except for the fact that the ESCo is putting up the funds. I think that it would be preferable if the institutions had the option, but not the obligation, to utilize a competitive bidding process.

Energy Performance Contracts

I have designed draft Energy Performance Contracts of the *"First-Out"* and the *"Shared Savings"* variety (contracts are available from the Newfoundland Department of Mines and Energy). The contracts are generic, and may have to be slightly altered to accommodate specific government regulations and circumstances. Both contracts include a detailed energy audit as the first stage of project implementation.

Another method, equally valid, is to have a separate small contract covering the energy study, followed by a project contract which deals with project implementation, including design, construction, financing, and energy management. The contracts should serve as a useful model of the type of contract the institutions should try to negotiate. Each ESCo has its own contract, but there is always room for the institution to negotiate improvements.

Conclusions and Recommendations

Energy performance contracting represents an attractive method of implementing energy savings retrofit in Newfoundland public institutions. There is significant potential, and there would appear to be no major institutional barriers, although systematic application of a competitive bidding process could prove a problem, particularly in the case of some of the smaller institutions.

The province should encourage its institutions to implement EPC activities as soon as possible. Demonstration projects should be introduced immediately. To ensure consistent quality, at least for the first few projects, assistance should be provided to the institutions in two areas:

- *Technical review of ESCo proposals*, which could be provided by the Department of Mines and Energy personnel in conjunction with other provincial government officials, as appropriate. Notwithstanding the fact the ESCo will have a staff of competent engineering people, this review would be especially important for those institutions which do not have professional engineers on staff and with respect to the first few projects which will have an important "demonstration effect".
- *Negotiating the terms of the contract with the energy service company.* This task is probably best performed by private sector consultants/lawyers with experience in the practical aspects of the ESCo business, with the financial support of the Department of Mines and Energy, at least for the first few projects.

One or two early projects should be documented and publicized as Demonstration Projects. This effort, coupled with an information brochure on EPC procedures, which should be prepared by the Department of Mines and Energy, and other supplementary information programming, including efforts to inform the ESCos of the opportunities in Newfoundland, would disseminate information on the advantages of energy performance contracting.

The demonstration projects might also be used to compare the competitive bidding and negotiated contract approaches to project implementation.

Table 1- Public Works Buildings with Total Annual Energy Costs Greater than $50,000

	Building	Electrical kWh	Oil Litres	Total ekWh	Total Cost $
1.	Confederation Building	9,912,301	651,750	16,886,026	$ 652,951
2.	Building 904 - Pleasantville	513,475	2,252,254	24,612,593	559,196
3.	Hoyles Home	1,044,146	824,006	9,861,010	294,017
4.	Institute of Fisheries	4,479,386	0	4,479,386	279,404
5.	H. M. Pennitentiary	1,063,445	402,127	5,366,204	193,383
6.	College of Fisheries	773,629	394,462	4,994,372	191,089
7.	DVS - Happy Valley	867,837	320,856	4,300,996	168,135
8.	Sir Richard Squires Bldg - Corner Brook	2,795,531	0	2,795,531	159,819
9.	DVS - Burin	1,147,082	243,304	3,750,435	154,259
10.	DVS -Corner Brook	936,764	310,560	4,259,756	151,265
11.	Building 1170 - Pleasantville	1,779,554	94,796	2,793,871	144,893
12.	DVS - Gander	618,310	314,378	3,982,155	142,606
13.	Building 25 (Rec Centre) - Torbay	1,988,432	0	1,988,432	139,328
14.	DVS - Carbonear	480,867	328,158	3,992,158	135,284
15.	Harbour Lodge - Carbonear	873,249	228,411	3,317,247	132,234
16.	Arts and Culture Centre- Gander	2,311,978	0	2,311,978	131,924
17.	Newfoundland Constabulary Building	1,861,627	24,681	2,125,714	129,162
18.	Escasoni	2,067,298	0	2,067,298	128,598
19.	DVS - Seal Cove	533,466	282,952	3,561,052	126,001
20.	T. C. Depot - Clarenville	1,671,869	0	1,671,869	117,300
21.	Hanger #3 - Torbay	709,263	193,941	2,784,432	114,084
22.	Highway Depot - Grand Falls	1,632,913	0	1,632,913	106,981
23.	DVS - Grand Falls	537,079	203,890	2,718,702	105,334
24.	Swine Breeding Station	1,019,177	150,944	2,634,278	103,978
25.	Arts and Culture Centre- Corner Brook	1,763,729	0	1,763,729	103,686
26.	Exon House	839,630	149,888	2,443,432	96,309
27.	Arts and Culture Centre - St. John's	1,525,680	0	1,525,680	92,871
28.	Arts and Culture Centre- Grand Falls	1,278,379	0	1,278,379	81,694
29.	Howley Building	1,185,920	0	1,185,920	80,030
30.	Public Building - Grand Falls	1,239,125	0	1,239,125	79,944
31.	DVS - St. Anthony	228,462	127,252	1,590,058	79,348
32.	DVS - Bonavista	339,836	171,167	2,171,323	79,344
33.	Wooddale Tree Nursery	539,953	115,590	1,776,766	78,221
34.	DVS - Port aux Basques	360,716	164,972	2,125,916	76,672
35.	DVS - Placentia	325,464	160,727	2,045,243	75,583
36.	Highway Depot - Deer Lake	285,214	170,822	2,113,009	74,581
37.	DVS - Lewisporte	368,390	136,178	1,825,495	73,656
38.	DVS - Baie Verte	338,348	141,624	1,853,725	69,967
39.	Cottage Hospital - Botwood	200,840	170,270	2,022,729	68,800
40.	Salmonier Prison	544,994	111,878	1,742,089	68,274
41.	Court House - St. John's	1,054,513	0	1,054,513	66,474
42.	DVS - Bell Island	416,799	127,460	1,780,621	66,107
43.	Male Correctional Centre - Stephenville	272,571	145,476	1,829,164	63,465
44.	DVS - Springdale	272,835	105,555	1,402,274	53,774
45.	Arts and Culture Centre- Stephenville	114,363	139,483	1,606,831	52,698
46.	Med Centre - Foxtrap	828,301	0	828,301	52,499
47.	Boy's Home - Whitbourne	418,702	0	418,702	50,069
	Total	56,361,442 kWh	9,359,812 litres	156,511,430 ekWh	$ 6,245,291

Note: 1 litre of oil is equal to 10.7 equivalent kilowatt-hours (ekWh).

Table 2- Other Provincial Agencies/ Crown Corporations with Total Annual Energy Costs Greater than $100,000

	Agency/Building(s)	Total Cost $
1.	Memorial University and Sir Wilfred Grenfell College	$ 4,400,000
2.	Newfoundland and Labrador Housing Corporation	2,430,000
3.	Cabot Institute	520,000
	Marystown Shipyard	520,000
4.	Newfoundland and Labrador Hydro	330,000
5.	Bay St. George Community College	300,000
6.	Newfoundland Liquor Corporation	270,000
7.	Canada Games Park Commission	160,000
8.	Newfoundland and Labrador Computer Services	120,000
	Total	$ 9,050,000

Source: Department of Energy, 1982/83 to 1983/84 survey of energy use and cost for Crown Corporations and other Provincial Government Agencies, 1985.

Table 3- Municipalities with Total Annual Energy Costs Greater than $100,000

	Municipality (Number of Buildings)	Electricity kWh	Oil Litres	Total ekWh	Total Cost $
1.	St. John's (35)	7,935,322	1,113,801	19,852,993	$ 803,280
2.	Corner Brook (11)	2,961,517	12,860	3,099,119	213,312
3.	Mount Pearl (10)	2,357,740	85,000	3,267,240	167,432
4.	Stephenville (11)	---	18,348		144,564
5.	Wabush (8)	1,048,080	336,917	4,653,092	133,254
6.	Gander (9)	1,276,386	39,899	1,803,055	114,020
7.	Labrador City (10)	2,623,593	99,891	3,692,427	105,654
	Total	18,202,638 kWh	1,706,716 litres	36,367,926 ekWh	$ 1,681,516

Note: 1 litre of oil is equal to 10.7 equivalent kilowatt-hours (ekWh).
Grand Falls information is not available, but their costs exceed $100,000.
Total cost does not include street lighting charges.

Table 4- Hospitals and Nursing Homes with Total Annual Energy Costs Greater than $50,000

Hospital	Electrical kWh	Oil Litres	Total ekWh	Total Cost $
1. Health Science Complex	17,929,240	4,560,551	70,831,632	$ 1,981,257
2. Western (Acute)	8,812,992	2,726,527	40,440,705	1,219,310
3. Grenfell Regional H. S.	1,792,525	2,257,338	25,946,042	811,023
4. St. Clare's	—	—	—	770,150
5. Charles S. Curtis	—	—	—	753,194
6. Grace General Hospital	—	—	—	727,000
7. Waterford Hospital	—	—	—	561,191
8. Carbonear General	3,093,120	1,048,186	15,252,078	513,753
9. Melville	—	—	—	451,000
10. Capt. William Jackman	—	—	—	378,000
11. Janeway Hospital	2,951,128	808,741	12,332,523	363,503
12. Central Newfoundland	—	—	—	339,300
13. Notre Dame Bay	—	—	—	330,000
14. Clarenville	—	—	—	293,327
15. Hoyles Home	1,044,146	824,006	10,602,616	292,757
16. James Paton Memorial	—	—	—	281,300
17. Sir Thomas Roddick	988,000	727,868	8,776,188	258,240
18. Dr. Chas Legrow	—	—	—	190,000
19. Glenbrook Lodge	2,225,555	5,433	2,283,688	159,967
20. Hillview Lodge (supplies other buildings)	566,859	629,844	7,306,190	149,320
21. MJ Boylen	—	—	—	144,900
22. St. Luke's	1,222,800	156,887	2,901,491	125,741
23. Escasoni	2,067,298	—	2,067,298	122,465
24. Lakeside Homes	1,772,640	—	1,772,640	120,336
25. Dr. Walter Templeman	—	—	—	102,769
26. Children's Rehab Centre	—	—	—	101,000
27. Bay St. George	1,422,240	—	1,422,240	100,605
28. Carmelite House	1,300,204	—	1,300,204	97,204
29. Exon House	839,630	149,888	2,443,432	96,309
30. Bonavista	1,361,604	—	1,361,604	90,590
31. Lions Manor	1,033,200	—	1,033,200	71,447
32. Botwood	282,781	143,978	1,823,346	61,852
33. Western (Special Care)	324,180	185,922	2,480,875	58,420
34. AM Guy Memorial	133,257	99,839	1,201,534	57,500
Total	—	—	—	$ 12,174,730

Note: Recent energy costs may vary depending on current hospital usage. Total consumption will be greater as a result of missing data.
1 litre of oil is equal to 10.7 equivalent kilowatt-hours (ekWh).

Table 5- School Boards with Total Annual Energy Costs Greater than $100,000

School Board (Number of Buildings)	Electrical kWh	Oil Litres	Total ekWh	Total Cost $
1. St. John's Roman Catholic (33)	8,199,080	2,720,651	37,310,046	$ 1,306,112
2. Avalon Consolidated (27)	10,508,100	1,459,686	26,126,740	1,114,564
3. Avalon North Integrated (15)	6,312,813	891,640	15,853,366	786,809
4. Terra Nova Integrated (31)	5,658,794	582,609	11,892,710	539,345
5. Bonavista-Trinity-Placentia Integrated (42)	3,328,589	794,853	11,833,516	448,357
6. Humber-St. Barbe Integrated (22)	3,963,061	414,529	8,398,521	406,709
7. Exploits Valley Integrated (17)	2,212,512	837,677	11,175,656	398,309
8. Burin Peninsula Integrated (19)	2,663,293	580,578	8,875,478	378,121
9. Labrador East Integrated (12)	1,044,331	818,276	9,799,884	376,251
10. Notre Dame Integrated (15)	2,405,713	462,494	7,354,399	372,462
11. Green Bay Integrated (28)	2,701,079	441,397	7,424,027	299,097
12. Port aux Port Roman Catholic (13)	3,378,102	278,946	6,362,824	298,674
13. Labrador Roman Catholic (9)	1,320,624	740,240	9,241,192	281,384
14. Placentia-St. Mary's Roman Catholic (20)	2,898,173	363,287	6,785,344	274,850
15. Exploits-White Bay Integrated (15)	2,400,502	202,060	4,562,544	204,694
16. Deer Lake Integrated (10)	1,751,669	293,300	4,889,979	199,077
17. Vinland Integrated (13)	406,425	416,979	4,868,100	192,518
18. Conception Bay South (7)	2,079,361	155,308	3,741,157	174,563
19. Bay St. George Roman Catholic (11)	2,051,734	97,906	3,099,328	163,966
20. Bay D'Espoir-Hermitage-Fortune Integrated (13)	1,078,961	228,299	3,521,760	158,039
21. St. Barbe South (18)	1,200,237	286,200	4,262,577	156,455
22. Cape Freels Integrated (10)	1,690,150	176,994	3,583,986	150,341
23. Ferryland Roman Catholic (13)	1,434,105	181,220	3,373,159	148,622
24. Port aux Basques Integrated (12)	637,154	271,215	3,539,154	137,662
25. Conception Bay Central (8)	600,534	253,602	3,314,075	129,685
26. Strait of Belle Isle Integrated (8)	186,413	218,518	2,524,556	104,570
Total	66,175,640 kWh	10,184,270 litres	218,256,800 ekWh	$ 8,967,136

Note: 1 litre of oil is equal to 10.7 equivalent kilowatt-hours (ekWh).

Energy Performance Contracting- The Ontario Government Experience

Shiv Sud, Policy Advisor

Ontario Ministry of Energy

Energy Performance Contracting- The Ontario Government Experience

Since 1975, the Ontario government has pursued energy efficiency improvements in its own buildings in a fairly aggressive manner, with impressive results. By the end of 1985, after investing $37 million, the government had reduced annual energy costs by $75 million. The cumulative savings of energy costs exceeded $450 million.

It was obvious that, due to limited capital budgets, not all the worthwhile energy efficiency improvement projects intended for Ontario Government buildings would be started within a reasonable time. This led to the decision to explore and experiment with the energy performance contracting option.

Since the Ontario Government didn't have prior experience with EPC, and, since the procedures appeared quite different from the usual government procurement process, it was decided to undertake a demonstration project before adopting this option on a wide scale.

This paper describes the demonstration project, the process that was followed in tendering and selecting an energy service company, and some suggestions on how other public sector organizations considering EPC for their buildings may benefit from our experience.

Demonstration Project

After due consideration of suitable sites, we chose the Ministry of Transportation complex in Downsview, Ontario. A previous energy audit had indicated that considerable savings were possible at the site, and that a substantial amount of capital would be required to retrofit the facilities for energy efficiency. The energy efficiency improvements had not been implemented due to budget constraints.

The Ministry of Transport site is a multi-purpose building complex, housing offices, a computer centre, laboratories, vehicle repair shops, garages, machine shops, food services, and warehouse storage space. There are 16 buildings, most from 35 to 40 years old. The total area is 77,330 square meters (832,400 square feet). The largest building is a 24,620 m^2 (264,975 ft^2) office building. Some of the buildings are as small as a few square meters.

There are 2,269 employees in the complex. It uses mostly natural gas and electricity, with some back-up oil, and the annual energy bill is about $1,500,00.

Tendering Process

It was evident from the start that the Ontario Government tendering process had to be followed in this example, even if it meant a considerable delay for the project. The standard tendering process had to be modified somewhat, due to the complexity and negotiation requirements of an EPC arrangement.

Tendering involved two stages of proposal to ensure that the energy service companies did not face huge preparation costs, while guaranteeing that the government received the best possible proposal.

First, a desirable model was described- a good first project including the following characteristics;

- An annual energy bill over $100,000.
- Relatively stable energy use.
- No major changes to building use, occupancy, or size.
- No extraordinary construction considerations.

A well prepared RFP document is absolutely essential to obtaining good proposals, because it communicates your expectations to the potential bidders. It also specifies the information they need to submit for evaluation and ranking of proposals.

A total of 13 ESCos attended a preproposal conference, which provided additional information and answered any questions on the demonstration project. Attending this conference was mandatory to qualify for submission of a proposal. Of the companies attending the conference, four submitted initial proposals, after conducting walk-through audits of energy use at the facilities.

We recommend a two stage evaluation of proposals. First, eliminate incomplete or obviously deficient proposals. Do a detailed quantitative evaluation of the rest.

A proposal submitted jointly by Honeywell and The Fenar Group ranked the highest, and a letter of intent was signed with them. If for some reason, the government decided not to proceed with the project, the ESCo's costs for preparing the business proposal would be reimbursed, up to a certain maximum.

Notwithstanding the nature of any measures the client may have contemplated in advance, the contractor should be allowed to propose technical solutions and alternatives based on a detailed energy audit. The contractor's financial investment in the project necessarily affects the choice of recommended capital and operating improvements.

The initial and final business proposal should match closely. If the final proposal is not satisfactory, go back to the next ranked

ESCo. When the process of proposal and selection is complete, draw up an energy services agreement. The final stage of the agreement is the actual implementation of the project.

Request for Proposal (RFP) Document

The Request for Proposal should contain a summary of the proposal. This should include corporate information (consortium make-up, and financial capability), a statement of qualifications and experience in the areas of energy auditing, design and engineering, implementation of energy retrofits, operation and maintenance, staff training, and management and technical expertise.

The proposed EPC plan should detail the overall management strategy, any proposed energy efficiency improvements and their costs, the implementation plan, operation and maintenance, staff training, and the financing plan. The RFP must also offer some idea of projected energy savings, the Ontario Government's share of these savings, and evidence of the ESCo's ability to provide bonds and insurance.

Energy Services Agreement

An outside law firm, in consultation with government lawyers, developed an Energy Services Agreement. The Ontario government insisted on using its own contract, as opposed to one prepared by an ESCo. The Ontario Government has some special contractual requirements, and it was important that the agreement reflected these. This also makes it easier to compare presentations, as all ESCos have to submit proposals based on the same draft agreement.

Successful Proposal

In the accepted proposal, the following energy efficiency improvements were recommended;

- Replacement of the central steam plant with a decentralized, high-efficiency hot water system.
- Implementation of energy efficient measures on ventilation, lighting, temperature and humidity levels during hours of use.
- Changes to operating equipment.
- A new computerized environmental control and monitoring system.
- Training of Ministry of Government Services staff in energy efficient operating and maintenance procedures.

The cost of the project was $2.9 million. The previous annual energy bill was $1.5 million. The projected energy savings amounted to $683,000 each year (47 percent). The total savings over the duration of the 7 year contract would be split as follows: 85 percent to the Esco, 15 percent to the Ontario government. The net present value (NPV) of Government cashflow over 7 years is $0.5 million. The NPV of Government cashflow over 10 years is $1.3 million.

Decentralizing the boiler creates displacement of existing operating staff. The displacement will be accommodated through attrition and reassignment within the Ministry of Government Services. The labour savings equal $210,000 a year. The NPV of Government cashflow over 7 years is $1.6 million. The NPV of Government cashflow over 10 years is $2.7 million

The overall benefits to the Ontario government included a total savings of $1.3 to $2.7 million over 10 years, no capital outlay, reversion of the equipment to the government after 7 years, and new technology, permitting accurate monitoring of the operation and precise control of the equipment. Other benefits are the presence of proven equipment and systems, the fact that the Esco will provide initial operation and assume the risk of cost over-run, and operating staff reductions, with Government staff trained for new positions.

Energy Performance Contracting in Public Buildings

Before a public sector administrator or building manager decides to use EPC, it would be a good idea to address some of the following concerns;

- *Availability of capital.* If you have access to capital from your internal sources, and, if you can allocate management and technical resources to the energy efficiency improvement projects, then doing it yourself is probably the best option. But, do not underestimate the lost opportunity and savings from projects that are delayed, or never completed, because of other competing priorities. Many people appear reluctant to share the savings with a private company, but are unable to undertake the projects themselves. In the end, they have no savings at all.
- *Availability of technical resources.* The technology involved in some of the energy efficiency improvement measures tends to be very specialized. Does your organization have the technical expertise to maintain and service the newer hardware and software? If not, it would be advisable to buy that expertise as part of an EPC package.
- *No-cost, low-cost measures.* Before approaching an ESCo, it is generally a good idea to implement no-cost and low-cost measures yourself because they are easily done, and payback tends to be excellent. However, if this is going to cause delay, these measures can be implemented by the ESCo, provided that its proposal contains the capital intensive items and is not based just on the no-cost and low-cost items, or what is termed "cream skimming", and the sharing of savings formula reflects the fact that a substantial portion of the savings will be produced with little capital investment by the ESCo.

- *Building stock.* If your building stock consists of a large number of small buildings, consider putting them together as a package. For example, a school board will generally do a few schools together, or a municipality will do all its arenas together. This allows an ESCo to offer a better deal, because there are some fixed costs in servicing an energy services contract.

  For a provincial government or a large municipality, it would be advisable to do one large, or a few smaller buildings first. There is some learning involved in the process, and a pilot or a demonstration program should provide that opportunity.

- *Tendering requirements.* Are you free to strike a deal with a single ESCo or do you have stringent tendering requirements? Unfortunately, the regulations that generally govern purchase of goods and services do not fit EPC retrofits very well. So, a considerable amount of adaptation has to be done in terms of evaluation and ranking of the best proposal. It is not as simple as picking the one with the lowest cost.

- *ESCos active in your area.* The approach you may follow in procuring EPC services will also depend on how many energy service companies are already active in your area, or will consider submitting a proposal. Remember, an energy services contract represents a long-term relationship different from a buy and sell transaction.

- *Treatment of savings in transfer payments.* An important question to ask is whether your organization gets to keep the operational cost savings resulting from energy efficiency improvements, or if they will result in reduced cost-based transfer payments. If the latter, you may have some serious negotiations on hand with your funding agency before signing an EPC agreement.

An Overview of the FedSave Energy Management Program

Based on a presentation by Denis Lagace

Chief, FedSave Energy Management Program

An Overview of the FedSave Energy Management Program

The FedSave Energy Management Program was created to help federal government departments and agencies reduce energy costs. FedSave achieves this goal through leadership initiatives and its information and awareness programs.

The 1986/87 fiscal year marks the beginning of the second decade of the FedSave program. During its first ten years, the program contributed $66 million in incentives to departments and agencies. FedSave's goal was to make sensible energy use an integral component of corporate planning and management.

The FedSave program has helped federal departments and agencies realize a 28 percent reduction in their energy consumption. Over the past decade, the program's cumulative savings have amounted to $1,100,000.

In its second decade, FedSave continues to lead the way in energy management and efficiency practices and is striving to help departments and agencies achieve further savings. The services offered by FedSave are an integral part of the program's function.

FedSave Services

Technical services offered by FedSave assist clients at each step of a total energy management program. FedSave technical staff define conditions, set objectives, and monitor implementation of energy savings initiatives in consultation with the client.

Energy Performance Contracting (also known as Savings Finance) is a unique business arrangement established by FedSave to finance energy management projects. FedSave will pay for a preliminary energy audit to determine the efficiency potential of the facilities. Then FedSave assists in the preparation and review of Requests for Proposals from parties interested in carrying out the energy management program. In addition, FedSave will cover contracting costs and provide training for the initiative.

FedSave offers training services to Government of Canada employees with energy management responsibility. Building operators, managers, and technicians are most likely to be involved in energy management programs.

Savings for Federal Departments

FedSave's information services are designed to keep client departments and agencies up to date on the latest developments in energy technology, and promote energy awareness. Services include an information centre, newsletters, and a wide range of promotional materials.

The FedSave program has helped federal agencies and departments enjoy significant energy savings against large odds. Correctional Service Canada (CSC), for example, reduced its energy consumption by 21 per cent over a five year period. Despite the special energy needs of correctional buildings (such as high levels of illumination), CSC managed an impressive reduction in energy costs, and plans further reductions in the near future.

The Department of National Defence (DND) consumes more energy each year than any other federal department, but, through FedSave initiatives, DND cut its energy costs from $347,136,000 to $301,426,000 in one year. For example, FedSave helped DND save over $1 million by arranging the transfer of three high pressure steam boilers to DND bases from an Agriculture Canada research station. The boilers' heating capacity greatly exceeded the research station's demand and were obviously wasting energy. But the boilers were ideal for the DND's needs, and the research centre received more efficient boilers that were better suited to *its* needs.

For further details on the FedSave program, consult your local Programs Office at (709) 772-5464.

Overview of the Provincial Energy Management Program

Phil Graham

Director, Energy Programs

Newfoundland Department of Mines and Energy

Don Driscoll

Manager, Energy Management and Audit

Newfoundland Department of Mines and Energy

Overview of the Provincial Energy Management Program

In Newfoundland, the Department of Mines and Energy offers assistance to provincial departments and agencies planning energy efficiency projects. While the focus here is on energy performance contracting projects, assistance is available for any energy management program or retrofit.

The Department is developing guidelines and standard procedures (as discussed by previous speakers), to simplify the initiation of EPC retrofits. These would cover project organization, preparing terms of reference, inviting proposals, selecting an energy service company, and negotiating a contract.

Technical assistance is also available. The Energy Management and Audit Group of the Energy Branch, although small, with only 4 technical staff positions, offers an excellent advisory service for energy management programs and retrofits. The group has developed a sophisticated set of computer software, incorporating over 70 individual programs, to analyze energy use in buildings, and the costs and savings of energy efficiency measures. The assistance this group could offer for an EPC project in a typical public building would be in the areas described below.

- *Building Energy Management Index*: The building energy management index can be calculated (based on a completed questionnaire), to compare energy use with that of similar buildings in our database, and to estimate the level of potential savings. (Anyone who wishes to have this analysis done is invited to fill out and send in the questionnaire.)
- *Energy Audit and Retrofit Recommendations*: The next step would be an energy audit of the facility involving a visit to the site, and computer analysis by an energy technician. The resulting report would show the estimated costs and savings of a number of retrofit measures. This would provide a very good basis for defining a possible EPC project.

  There are usually low cost measures, operational improvements and maintenance work which can and should be done by the building operator before embarking on an EPC project. Why let an outside company benefit from savings that can be achieved in-house?

- *Detailed Energy Study*: A detailed energy study of the building by the ESCo defines the specific measures to be undertaken. Technical review of this study by the building operator is essential before a commitment is made to proceed further with the project. The Energy Management and Audit Group have the necessary expertise, and are available to do this review.

Contract Negotiation, Project Implementation and Monitoring: The role of the Department of Mines and Energy would normally be minimal for contract negotiation and project implementation. However, assistance is available, if needed. The reporting of energy use statistics to the Department during the monitoring phase is encouraged, to allow the maintenance of an up-to-date database and periodic reports to the building operators.